View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Elsevier - Publisher Connector

Strengthening capacity for health research in Africa

James A G Whitworth, Gilbert Kokwaro, Samson Kinyanjui, Valerie A Snewin, Marcel Tanner, Mark Walport, Nelson Sewankambo

Lancet 2008; 372: 1590–93

The Wellcome Trust, London, UK (J A G Whitworth FRCP, V A Snewin PhD, M Walport FMedSci); **Kenya Medical Research Institute, Department of Clinical Pharmacology, Kenyatta National Hospital, Nairobi, Kenya** (Prof G Kokwaro PhD); **Kenya Medical Research Institute, Centre for Geographic Medicine Research, Kilifi, Kenya** (S Kinyanjui PhD); **Swiss Tropical Institute, Basel, Switzerland** (Prof M Tanner PhD); **Makerere University, Faculty of Medicine, Kampala, Uganda** (Prof N Sewankambo MBChB)

Correspondence to:
Dr James A G Whitworth, The Wellcome Trust, 215 Euston Road, London NW1 2BE, UK
j.whitworth@wellcome.ac.uk

Health research has a key role in the development of low-income and middle-income countries. There are several current initiatives that have greatly contributed to capacity strengthening of health research in sub-Saharan Africa, including those supported by WHO and Tropical Disease Research (TDR), the Swedish International Development Agency (SIDA) and Department for Research Cooperation (SAREC), the European Union, the Bill & Melinda Gates Foundation, the International Clinical Epidemiology Network (INCLEN), the Fogarty International Centre, the National Institutes of Health (NIH), and the Wellcome Trust. However, enormous challenges remain for sub-Saharan Africa to establish a common framework for sustainable research capacity strengthening.

The Global Ministerial Forum on Research for Health in Bamako will give emphasis to the challenges of research for development and health, the need for more health-system research, and a greater intersectoral approach to science, technology, and health. That health research is indispensable for improving health, equity, and development is now widely accepted,[1] yet how sub-Saharan African countries can develop their fragile health systems and their own capacity to do health research is rarely discussed.[2]

***Panel 1:* Requirements for health-research capacity strengthening in Africa**

Improve the research environment

- By ensuring a legal framework in which research can flourish
- By raising the profile of science and health research with policy makers, the media, and local populations

Support individuals

- By promoting secondary-school and tertiary-school science education
- By creating career pathways, developing critical mass, and recruiting and retaining talented scientists
- By supporting senior scientists to act as research leaders and role models

Support institutions

- By developing competitive grant and fellowship schemes administered by African institutions
- By providing institutional support for infrastructure, management, and technical services, and strategic development planning
- By promoting networks and partnerships, especially between African institutions
- By using funding mechanisms as drivers of change at African institutions

A recent African-led initiative—the Initiative to Strengthen Health Research Capacity in Africa (ISHReCA)—has identified nine key requirements to strengthening health-research capacity in Africa (panel 1). We focus on these requirements and suggest practical strategies for sustainable capacity strengthening in African institutions.

In many sub-Saharan African countries there is a non-conducive environment for research: the legislative framework has not kept pace with new trends in research, such as genetics research, ethical conduct of clinical trials, material exchange, and intellectual property rights. These legislative gaps hamper multi-institutional research such as clinical trials. Governments must appreciate the need to make greater commitments to provide strategic planning, legislative reforms, and funding for effective management of research activities. The recently launched International Centre for South–South Co-operation in Science, Technology and Innovation—under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in Kuala Lumpur, Malaysia—can provide policy advice and ease the exchange of experiences with policy makers.[3]

Science is a global activity, and some of the best African researchers move to countries where their efforts are better rewarded and appreciated. High-profile advocates are needed to promote science within African society, to ensure that research gets its share of the national budgetary allocation and attracts additional external funding. This could be done by national academies of science—the African Academy of Sciences and the African Union. Politicians and policy makers need to consider how science and technology can contribute to development, including achievement of the Millennium Development Goals. African governments should recognise that funds allocated for research are a good investment. More appreciation of the benefits of research might lead to greater commitment to providing dedicated funding to national research budgets. Science can also contribute directly to wealth creation, through product development partnerships with industry and entrepreneurs. Strong and sustained advocacy is needed, similar to that undertaken for the provision of AIDS treatment at affordable cost.

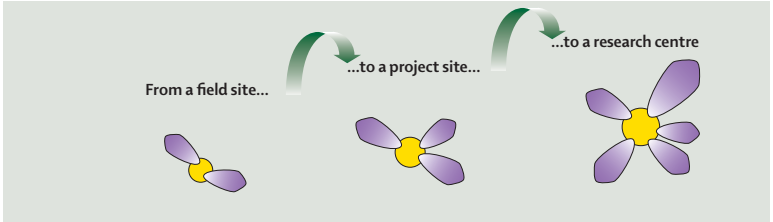
One example of an institution able to support such advocacy is ISHReCA, created after meetings in 2007 in Kilifi, Kenya, and Cape Town, South Africa, which brought together health researchers in Africa and international health-research funders. ISHReCA aims to promote self-sustaining research groups that can initiate and carry out high-quality health research in Africa. Its mission also includes helping the translation of research

products into policy and practice through better integrated approaches to capacity development at individual, institutional, and system levels.[4] ISHReCA aims to promote African-led plans, leading to better negotiations with funders and partners, increased commitment of national governments and civil society, and national and international reinforcement of the urgency for networking and building African capacity for health research.

The current population of African researchers is ageing, and young talented researchers need to be identified early on in their careers. Thus, promotion of secondary-school science education and training of science teachers are needed. Also, key centres of research excellence on which to concentrate available resources for research capacity strengthening should be identified at a regional and national level. Some such centres, such as those in Ifakara, Fajara, Navrongo, Kintampo, Kilifi, Manhiça, Makerere, and Bamako already exist, but many more are needed. These centres can offer leadership in research, provide mentorship programmes for interns, and collaborations with other teaching and research institutions for high-quality training of the next generation of research leaders.

The lack of career paths to attract and retain good researchers is the most serious impediment to health research. The development of attractive career pathways is key to bringing research in sub-Saharan Africa to international standards of excellence. We propose starting attractive research-focused career pathways within key African institutions to address this issue. These should open new career opportunities at every level, starting with a broad base of junior interns, continuing with competitive PhD or postdoctoral programmes combined with equivalent clinical research fellowship and MD schemes. Most individuals should have the opportunity to progress beyond a PhD, if they are competitive. Africa simply cannot afford to lose more trained health researchers both within and outside the continent. Therefore, attractive packages should be available, including appropriate salaries for internationally competitive candidates, career posts, and opportunities for training and travel for postdoctoral researchers. Crucial elements frequently missing in African universities are programmes to recruit women into science, promotion of good mentoring, and empowerment of junior scientists. At Makerere University in Uganda, well-funded junior clinical scholarship positions have been put into place to attract, mentor, and retain junior researchers, and a fast-track promotion pathway, based mainly on outstanding research productivity, has been created.

In most African institutions, junior researchers develop their careers on their own. A strategy to identify and support research group leaders, who can help to mentor young researchers through the career pipeline, could be more productive. Such individuals would feed the scientific passion of junior researchers and help their careers. This plan would lead to identification and support of existing and potential research leaders within the country, and attract those who have moved to work abroad to return. Secure, long-term funding is needed for these individuals if they are to build national research capacity, for example through endowed positions or guaranteed, long-term career funding. Sources of such funding could be diversified and expanded beyond the usual sponsors and foundations, with grants raised from national governments, private donations, charities, and corporations.



What is the core?	Informal alliance of projects and trials at a site	Established infrastructure to projects and trials	Fully established entity that provides all science infrastructure
Core funding	Resources from projects fund the core	Small amount of core-funding and resources	Funding for core established and projects contribute to core
Portfolio	Small number of projects that drive the core	Small number of projects, but able to add different diseases or interventions	Different interventions or different diseases
Time focus	Short term	Mid term 3–5 years	Long term >10 years
Infrastructure	Very basic and dependent on project funding	Established basics that survive individual trial and project	Full infrastructure maintained over time with projects paying share

Figure: **Development from a field site to a research centre**
The yellow circle indicates the core and the purple petals indicate the projects.

Schemes that are run through and include contributions from African governments are needed to sustain promising young scientists. The management of such government-driven schemes needs to be carefully structured to ensure that they are non-bureaucratic and flexible. National grant awards should be made in open, transparent competition to institutions and individuals to promote cross-institutional, multidisciplinary research, which develops South–South linkages. Promising young scientists should get support, including training in scientific-writing skills and translating research results into policy, to help them to develop competitive proposals. Substantial re-entry grants are needed to attract scientists who have moved abroad. For example, the Health Research Capacity Strengthening Initiative partnership between the UK Department for International Development (DFID), the International Development and Research Centre (IDRC) Canada, and the Wellcome Trust has lent support to develop nationally available research grant funding, awarded and administered locally, in Kenya and Malawi.[5]

African governments should provide the basic infrastructure for health research. Although initiatives, such

Panel 2: Some initiatives and schemes for capacity strengthening in Africa

- European and Developing Countries Clinical Trials Partnerships (EDCTP) Networks of Excellence
- Netherlands–African partnership for capacity development and clinical interventions against poverty-related diseases. Netherlands Organisation for Scientific Research
- European-Union-funded Network for the Co-ordination and Advancement of sub-Saharan Africa–EU Science and Technology Cooperation (CAAST-Net)
- Health Research Capacity Strengthening (HRCS) initiative partnership between DIFD, IDRC, and the Wellcome Trust
- African Health Research Forum and University Science, Humanities and Engineering Partnerships in Africa (USHEPiA)
- Neglected Tropical Diseases (NTD) fellowship scheme, supported by a consortium of European Foundations
- The Royal Society UK science networking scheme with Ghana and Tanzania
- The Wellcome Trust African Institutions Initiative

For more on the **EDCTP Networks of Excellence** see http://www.edctp.org

For more on **Netherlands Organisation for Scientific Research** see http://www.nwo.nl/naccap

For more on **CAAST-Net** see http://www.caast-net.org

For more on the **HRCS partnership** see http://www.wellcome.ac.uk/stellent/groups/corporatesite/@sf_cross_cutting_activities/documents/web_document/wtx035037.pdf

For more on **USHEPiA** see http://web.uct.ac.za/misc/iapo/ushepia/bg.htm

For more on the **NTD fellowship scheme** see http://www.ntd-africa.net

For more on the **Royal Society networking scheme** see http://www.royalsoc.ac.uk/funding.asp?id=6816)

For more on the **Wellcome Trust African Institutions Initiative** see http://www.wellcome.ac.uk/Funding/Biomedical-science/Grants/Other-initiatives/WTD028338.htm)

as those of SIDA and SAREC, have made substantial contributions in helping infrastructure upgrading at African institutions, such activities should be in addition to national governments' central role. African governments and funders should work together to create appropriate ways to ensure the full costs of research are provided. This effort might include the cost of upgrading infrastructure and improving support services, such as research management and governance, accounting and financial reporting, information technology, and library services. Research institutions and universities with a real potential for success should have priority, so resources can be focused to drive national or sub-national research programmes. For research to flourish, requisite organisational frameworks, adequate human resources, and access to appropriate skills are needed. SIDA and SAREC have set a positive trend, and the Wellcome Trust has recently launched an African Institutions Initiative, which aims to build a critical mass of sustainable local research capacity across Africa, by strengthening African universities and research institutions.[6]

Initiatives might fail to achieve aims because of no coordination and duplication of effort. With close harmonisation between development agency donors and health-research sponsors, and increased alignment with national health-research priorities, sustainable progress can be made in research capacity strengthening in Africa. An interagency working group for Enhancing Support for Effective National Capacity Efforts (ESSENCE) has been created with relevant international funders of health research to maintain contact and promote coordination.[7] These initiatives that help research capacity strengthening (including ISHReCA and ESSENCE), relevant United Nations agencies, and the African Union should find a common platform that enables creation of complementary networks and partnerships to make space for African institutions to articulate their needs to develop health research further.[8]

Sponsors can encourage Northern research institutions and universities to develop long-term sustainable partnerships with their counterparts in low-income and middle-income countries through appropriate funding mechanisms. Increased support for South–South networks, whereby established universities and research institutions can assist the development of emerging institutions, will also be essential. African research centres need long-term support to be able to grow organically over time. A good example of this development is Ifakara Health Institute in Tanzania, which has developed from a site that relied on the Swiss Tropical Institute for scientific and administrative drive to an independent research centre based on a Trust governance structure with a scientific board, which derives core funding from several grants giving long-term stability and independence. International sponsors should consider providing core funds to assist the development of research centres that can address national and international research priorities through an appropriate balance of research, training, and service provision (figure).[9]

There is increasing interest in and recognition of the crucial importance of strengthening the capacity for research for health in Africa.[10] A similar approach has been proposed in the context of health-systems research[11] and in the social sciences and humanities.[12,13] Lessons from other sectors, such as agriculture and education, need to be sought and discussed. Several initiatives and schemes have recently been established or are under development (panel 2).

African academics and researchers are best placed to identify what is needed to strengthen their academic institutions. ISHReCA is already raising the profile of African views on capacity strengthening and ensuring that these views are heard. ESSENCE is one group of development donors and health-research funders willing to engage in such discussions.

To assist coordination in this area, knowledge platforms should be developed, maintained, and updated to provide high-quality information on national health-research systems, funders' strategies, and activities in relation to health research. Examples include the Health Research Web from the Council on Health Research for Development (COHRED),[14] and other platforms.

For more information on **other platforms** see www.tropika.net and www.SciDev.net

Measurement of success of capacity strengthening initiatives is not straightforward and new methods are being developed to assist with this (eg, the outcome mapping techniques used by IDRC).[15] These can complement useful assessments that have already been done by development agencies including the Danish

International Development Agency (DANIDA),[16] Swiss Commission for Research Partnerships with Developing Countries (KFPE),[17] and SIDA and SAREC.[18,19] However, improved learning from such initiatives and wider dissemination of case studies remain important issues.

Improved research communication and learning will assist in the implementation of the 2005 Paris Declaration on Aid Effectiveness,[20] which aims to foster targeted investments to help developing countries. The challenge remains to improve harmonisation of the efforts of research funders and donors where these are complementary, while retaining diversity of opportunities and increasing alignment with countries' own priorities.

Research for health, as articulated in the objectives of the Global Ministerial Forum, is not a luxury; on the contrary, it is essential for developing future interventions and improving delivery of existing interventions.

References

1 Nuyens Y. No development without research: a challenge for research capacity strengthening. Geneva: Global Forum for Health Research, 2005. http://www.globalforumhealth.org/filesupld/RCS/RCS_Nuyens.pdf (accessed Oct 8, 2008).

2 Council on Health Research for Development. A health research perspective on the African Regional Health report. Research for Health briefing 5. Geneva: COHRED, 2007. http://www.cohred.org/briefing/COHRED_BRIEFING5_APRIL2007.pdf (accessed Oct 8, 2008).

3 International Centre for South–South Co-operation in Science, Technology and Innovation. http://www.unesco.org/science/psd/thm_innov/unispar/malaysia_coop.shtml (accessed Oct 8, 2008).

4 Initiative to Strengthen Health Research Capacity in Africa (ISHReCA). http://www.mrc.ac.za/researchdevelopment/ISHReCAbrochure.pdf (accessed Oct 8, 2008).

5 The Wellcome Trust. Health Research Capacity Strengthening Initiative in Kenya and Malawi; http://www.wellcome.ac.uk/stellent/groups/corporatesite/@sf_cross_cutting_activities/documents/web_document/wtx035037.pdf (accessed Oct 8, 2008).

6 The Wellcome Trust African Institutions Initiative. http://www.wellcome.ac.uk/Funding/Biomedical-science/Grants/Other-initiatives/WTD028338.htm (accessed Oct 8, 2008).

7 Olsson B. Enhancing Support for Strengthening the Effectiveness of National Capacity Efforts (ESSENCE). http://www.epb2008.dk/Capacity_Building_in_Research_for_Health_Challenges.pdf (accessed Oct 8, 2008).

8 Swiss Commission for Research Partnerships with Developing Countries (KFPE). Guidelines for research in partnership with developing countries. Berne: Swiss Academy of Sciences; 1998. http://www.kfpe.ch/key_activities/publications/guidelines/guidelines_e.php (accessed Oct 8, 2008).

9 Tanner M, Kitua AY, Degrémont A. Developing health research capability in Tanzania: from a Swiss Tropical Institute Field Laboratory to the Ifakara Centre of the Tanzanian National Institute of Medical Research. *Acta Trop* 1994; **57:** 153–73.

10 Sawyerr A. African universities and the challenges of research capacity development. http://www.codesria.org/Links/Publications/jhea1_04/sawyerr.pdf (accessed Oct 8, 2008).

11 WHO. Alliance for Health Policy and Systems Research. Sound choices: enhancing capacity for evidence-informed health policy. Geneva: World Health Organization, 2007. http://www.who.int/alliance-hpsr/resources/Alliance_BR.pdf (accessed Oct 8, 2008).

12 Harle J. Frameworks for Africa–UK research Collaboration in the social sciences and humanities. African university perspectives. 2007. The Association of Commonwealth Universities, London. http://www.acu.ac.uk/resman/Frameworks%20for%20Africa–UK%20Collaboration%20–%20ACU–BAc%20report.pdf (accessed Oct 8, 2008).

13 Vehlo L, Carlota de Souza Paula M, Vilar R. Building research capacity in social sciences for development in Bolivia: a case of institutional innovation. http://www.intech.unu.edu/publications/discussion-papers/2004-8.pdf (accessed Oct 8, 2008).

14 COHRED Health Research Web. http://www.cohred.org/HealthResearchWeb/ (accessed Oct 8, 2008).

15 Outcome Mapping Learning Community. http://www.outcomemapping.ca/ (accessed Oct 8, 2008).

16 Enhancement of Research Capacity Programme, Danish Research Network for International Health. http://enrecahealth.ku.dk/ (accessed Oct 8, 2008).

17 Maselli D, Lys J-A, Schmid J. Swiss Commission for Research Partnerships with Developing Countries (KFPE). Improving impacts of research partnerships, 2nd edn. Bern: Swiss Academy of Sciences, 2006.

18 Eduards K. Review of Sida's Research Cooperation. A synthesis report. Stockholm: Swedish International Development Cooperation Agency, 2006. Sida Evaluation 06/57. http://www.oecd.org/dataoecd/55/59/38968129.pdf (accessed Oct 8, 2008).

19 Hyden G. University and faculty research funds at universities in Mozambique, Tanzania and Uganda. Stockholm: Swedish International Development Cooperation Agency, 2006. Sida Evaluation 06/23. http://www.sida.se/sida/jsp/sida.jsp?d=118&a=26102&language=en_US (accessed Oct 8, 2008).

20 Paris Declaration on Aid Effectiveness 2005; http://www.oecd.org/document/18/0,3343,en_2649_3236398_35401554_1_1_1_1,00.html (accessed Oct 8, 2008).